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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,424	12/19/2001	Elliot K. Kolodner	KOLODNER=3	2072
1444	7590	11/19/2004	EXAMINER	
BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, NW SUITE 300 WASHINGTON, DC 20001-5303			MOAZZAMI, NASSER G	
			ART UNIT	PAPER NUMBER
			2187	

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/021,424

Applicant(s)

KOLODNER ET AL

Examiner

Nasser G Moazzami

Art Unit

2187

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11-18, 23-30, 35 and 36 is/are rejected.
- 7) ☒ Claim(s) 7-10, 19-22 and 31-34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 6
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/19/2001.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The Information Disclosure Statement submitted by applicant on 12/19/2001 has been considered. Please see attached PTO-1449.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1-6, 11-18, 23-30 and 35-36 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicant Admitted Prior Art, hereinafter AAPA.

As per claims 1, 5 and 12, AAPA teaches a method for memory management in execution of a program by a computer having a memory, comprising: allocating respective portions of the memory to data objects using mutator threads of the program, whereby the objects are held in a heap created by the program [**space for an objected is allocated in a heap (page 1, lines 19-20)**]; tracing the data objects in the heap so as to mark the data objects that are reachable at a given stage in the program [**tracing the interrelation of objects starting from specified roots and traversing all connected**

objects in the heap. Objects that are reachable on this graph are considered live objects (page 2, lines 4-8)]; looping over the mutator threads so as to verify for each of the mutator threads that every update to the allocated portions of the memory in progress by the mutator thread has been completed **[execution of application program threads that may update and change the object graph with the marking by collector thread (page 2, lines 16-19)];** and sweeping the heap so as to free the memory that is allocated to the data objects that are not marked as reachable, for reallocation to new data objects **[automatically reclaiming storage assigned to the unused objects, in order to free the storage for reuse (page 1, lines 20-24); the memory is swept and all memory space occupied by unmarked objects is reclaimed , so that it is free to be reallocated (page 2, lines 11-13)].**

As per claim 2, AAPA teaches forcing each of the mutator threads to perform a fence operation **[enforcing sequential program execution order (page 5, lines 10-15)].**

As per claims 3-4, AAPA teaches pointer references **[pointers (page 4)],** and marking the data objects referenced by the pointer references as reachable **[marking the objects as a live objects and garbage (page 2)].**

As per claim 6, AAPA teaches tracing the objects using a collector thread **[operations carried out by collector thread (page 2)].**

As per claim 11, AAPA teaches that the collector and mutator threads operate on the memory concurrently [**concurrent garbage collection (page 2)**].

As per claims 13-18, 23-30 and 35-36, claims 13-18, 23-30 and 35-36 encompass the same scope of the invention as those of claims 1-6 and 11-12 in addition of an apparatus and a computer readable medium having instruction stored therein for performing the steps of the method claims 1-6 and 11-12. Therefore, claims 13-18, 23-30 and 35-36 are rejected for the same reasons as stated above with respect to claims 1-6 and 11-12.

Allowable Subject Matter

4. Claims 7-10, 19-22 and 31-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

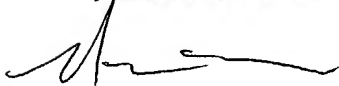
5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached PTO-892.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nasser G Moazzami whose telephone number is (571) 272-4195. The examiner can normally be reached on 7:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NASSER MOAZZAMI
PRIMARY EXAMINER



11/17/2004